CDC

LYME DISEASE SURVEILLANCE SUMMARY

BACTERIAL ZOONOSES BRANCH
DIVISION OF VECTOR-BORNE
INFECTIOUS DISEASES
CENTER FOR INFECTIOUS DISEASES
CENTERS FOR DISEASE CONTROL

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PLANS FOR CDC-SUPPORTED EXTRAMURAL LYME DISEASE RESEARCH PROJECTS FOR FY 1991.

A total of $5,600,000 for research and public education on Lyme disease has been provided by Congress to CDC in FY 1991. At least 50 percent of the available funds shall be made available by CDC for grants to public or non-profit institutions. As stated in the appropriations Bill, seventy-five percent of the grants shall be made to qualified applicants who will provide services in geographic areas for which not less than 250 cases of Lyme disease have been reported to the public health office of the State involved or to the CDC in fiscal year 1990. Not less than twenty-five percent of the funds shall be made available for public education.

The CDC/DVBID anticipates that an announcement of availability of funds for Cooperative Agreements and Contracts will be published in the Federal Register in early 1991. Proposals will be solicited to carry out disease surveillance, epidemiologic and ecologic studies, development of improved diagnostic tests, development of prevention and control strategies, and public information and education. Eligible applicants will include State and local health departments, universities, colleges, research institutions, and private non-profit organizations. Multiple awards of varying amounts will be made. A short turn around time for review of submitted proposals is anticipated, with an estimated due date of 1 March 1991. Review, negotiation, and awarding of Cooperative Agreements and Contracts should be completed by 1 April 1991. For more information call or write to Dr. David T. Dennis, CDC, P.O. Box 2087, Fort Collins, CO 80522, telephone: (303) 221-6453.

UPDATE ON CDC-SUPPORTED EXTRAMURAL RESEARCH PROJECTS FOR FY 1990.

Funds for extramural research on Lyme disease first became available to CDC in FY 1990. Requests for proposals were solicited in early 1990 for research studies on various aspects of the epidemiology, ecology, and prevention and control of Lyme disease. Awards were

made to fund one Cooperative Agreement, four Contracts, and two Purchase Orders for research services. Awards range from $25,000 to $250,000 each.

A brief description of the research being carried out in the above categories follows:

1. Cooperative Agreement for Epidemiological and Ecological Research Studies of Lyme Disease in New York State. Dr. Dale L. Morse. The New York Department of Health. Dr. Durland Fish. New York Medical Center. The Agreement, funded for one year, with options for continuation, is comprised of 5 projects, the objectives of which are outlined below:

   - Project 1: To determine the completeness and accuracy of Lyme disease surveillance data by comparing surveillance reports with computerized hospital discharge records of patients with a diagnostic code of Lyme disease; to characterize the completeness of reporting by demographic, hospital and geographic factors; to describe the epidemiology of hospitalized Lyme disease cases in New York; and, to evaluate the potential of the hospital discharge data system for other Lyme disease surveillance purposes.

   - Project 2: To conduct a pilot study to determine the accuracy and completeness of reporting from outpatient settings, and to compare the differences between active and passive surveillance.

   - Project 3: To determine the prevalence and incidence of Lyme disease in hyperendemic communities in Westchester and Suffolk counties, and to determine risk factors for infection in the residential (peridomestic) transmission setting. Data obtained by questionnaire and by pre- and post-season serologic screening of approximately 900 residents of the study areas are being analyzed and will be correlated with environmental data being collected in the same communities in Projects 4 and 5.

   - Project 4: To define the density of spirochete-infected Ixodes dammini, as related to peridomestic habitats; i.e., lawn, ornamental plantings, fringe (ecotone), and woods. To date, infected vectors have been found by dragging in all ecotypes, but are most numerous in woods and ecotone areas, especially along stone fences.

   - Project 5: To correlate landscape features of residential properties with infection rates of vertebrate hosts, tick infestations of vertebrates, and Borrelia burgdorferi isolation rates from ticks collected from animal hosts.

Acaricide Trials for the Control of *Ixodes dammini* in Residential Areas. Dr. Durland Fish. New York Medical Center.

Area-wide acaricides were applied to residential properties in a hyperendemic area of Westchester Co., NY. Three different acaricides were applied during June of 1990 to coincide with the peak of nymphal Ixodes dammini abundance. The percent control was measured by comparison of nymphal tick abundance on intervention and nonintervention sites. Percent control varied from 71-98%. The chemicals in order of efficacy were: Chlorpyrifos > Cyfluthrin > Carbaryl. Cyfluthrin is especially promising since its rate of application (0.1 lb/acre) is relatively low, thereby minimizing environmental impact. The effect of applications of acaricides in the fall on populations of adult ticks and replete larvae will be evaluated in 1991. The role of acaricides in an Integrated Pest Management campaign involving acaracides, environmental modification and public education is under evaluation in the same study area.

Studies to Determine the Tick Vector Species Responsible for Transmission of the Lyme Disease Spirochete in the Southern United States. Dr. Daniel E. Sonenshine, Old Dominion University and Dr. Jay Levine, North Carolina State University.

Efforts are under way to determine whether the enzootic cycle of B. burgdorferi in rodents and ticks occurs in Virginia and North Carolina. Ticks examined for B. burgdorferi include Amblyomma americanum, Dermacentor variabilis, Haemaphysalis leporispalustris, Ixodes dentatus, Ixodes cookei, Ixodes texanus, and Ixodes scapularis. Although spirochetes have been visualized by fluorescent antibody examination in several ticks collected in North Carolina, all attempts to culture B. burgdorferi have failed. Moreover, attempts to isolate B. burgdorferi from white-footed mice, raccoons, bear, and white-tailed deer have failed. Efforts to isolate B. burgdorferi in the southeastern U.S. will be intensified during the spring of 1991.

Define Dispersal of *Ixodes dammini* and *Borrelia burgdorferi* to New Foci Along the Mississippi River. Dr. Uriel Kitron. University of Illinois Campaign-Urbana.

Four study sites have been established in Northern Illinois: Rock Island Co., Ogle Co., McHenry Co., and Cook Co. The abundance of larval I. dammini on mice, adult I. dammini on deer, and the proportion of mice infected with B. burgdorferi determined by culture of ear punch biopsies are presently under evaluation. The Geographic Information Services (GIS) will be used to try and pinpoint key factors which limit dispersal of I. dammini and B. burgdorferi in the midwestern U.S.

5. Determine the Distribution of Lyme Disease in Pennsylvania Through Sampling of Wildlife Species. Dr. Rexford D. Lord. Indiana University of Pennsylvania.

Trapping of small mammals and collecting of ticks was performed at 15 sites in 3 west-central Pennsylvania counties during the period May-October, 1990. One hundred ninety-nine Peromyscus and smaller numbers of other mammals were collected. B. burgdorferi was isolated from 15 Peromyscus and one squirrel. Isolations of B. burgdorferi have also been made from adult and nymphal forms of I. dammini. Hemlock (Tsuga canadensis) habitat apparently results in high winter survival of the white-footed mouse. More than 2,000 blood/tick collection kits were distributed to deer hunters in 1990. A total of 121 blackbear and 300 deer serum samples collected in 1989 has been sent to CDC for testing.

6. Determine a Baiting Scheme to Achieve Maximum Contact Rate With a Resident *Peromyscus* Population for Development of Control Strategies for Lyme Disease. BioCenotics, Osseo, MI.

The objective is to design improved rodent bait stations and to test their placement and density to achieve maximum (at least 75% of population) contact rate with the resident populations of P. leucopus.

7. Request to Establish a National Reference Collection of *Borrelia burgdorferi* Antibody Positive Serum. Dr. Steven Lugar. Old Lyme, Connecticut.

Nine units of plasma have been collected from clinically characterized patients, and are being entered into the CDC reference collection. The plasma will be used as reference for standardization of serologic testing methodologies, and other diagnostic and immunologic studies.

NATIONAL SURVEILLANCE DATA, 1989

Compilation of national 1989 Lyme disease case reports is nearing completion. Preliminary national Lyme disease figures for 1989 include over 9,000 case reports by states to CDC. More than 63% of these meet the current epidemiologic case definition, approximately 13% do not meet the case definition, and insufficient information was provided for the remaining 24%. Case reports for 1989 were submitted to CDC as hard copy, or on magnetic media in a variety of formats. Consequently, annual compilation of Lyme disease case reports currently requires substantial person-hours. Beginning in January, 1991, Lyme disease will be reportable to CDC via the National Electronic Telecommunications Surveillance System (NETSS). When this system is fully implemented, annual compilation of case reports will be easier and result in more timely feedback of national surveillance figures to states and the public.

NATIONAL SURVEILLANCE DATA, 1990

CDC intends to complete the collection of 1990 Lyme disease case reports from states by mid-March, 1991. Optimally, these data would be submitted by States to CDC in the form of EpiInfo version 5.0 *.REC files on computer diskette (5.25" or 3.5", IBM-type). Ready-made entry screens for 1990 Lyme disease reporting using EpiInfo version 5.0 are available from the Bacterial Zoonoses Branch at no charge. Contact Dr. Bill Paul, EIS Officer (303-221-6472), or Dr. Roy Campbell, Medical Officer (303-221-6474). Other means of case reporting are acceptable, including ASCII files on diskette (please include field labels and field lengths) and hard copy.

The new, national Lyme Disease Case Report Forms are available, without charge, to State and local health departments. Orders may be placed by calling 303-221-6453.

Lyme Disease Surveillance Summary (LDSS) is edited by Drs. Robert B. Craven and David T. Dennis. If you have information to contribute or wish to receive a LDSS, please contact them at:

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